

CLAIMS

1. A data distribution apparatus comprising:

a distribution unit (202) using packet communication to distribute, to a reception
5 apparatus, data having a serial number attached thereto in streaming form;

an acceptance unit (204) accepting a request for distribution of stream data
preceding a predetermined serial number, from said reception apparatus; and

a transmission unit (202) transmitting, upon the acceptance of said request for
distribution, said stream data preceding said predetermined serial number in parallel with
10 the distribution of data in said streaming form by said distribution unit (202).

2. The data distribution apparatus according to claim 1, further comprising a
hold unit (203) holding said stream data transmitted by said distribution unit (202) for a
predetermined period of time.

3. The data distribution apparatus according to claim 1, wherein
said transmission unit (202) transmits said stream data preceding said
predetermined serial number in descending order of the serial number.

4. The data distribution apparatus according to claim 1, wherein
said acceptance unit (204) accepts said request for distribution including
information about an amount of data requested to be distributed, from said reception
apparatus, and

said transmission unit (202) transmits said stream data preceding said
25 predetermined serial number by said amount of data.

5. The data distribution apparatus according to claim 1, wherein
said distribution unit (202) distributes said data having the serial number

attached thereto in streaming form to a multicast address,

said transmission unit (202) transmits said stream data preceding said predetermined serial number to a unicast address of said reception apparatus from which said accepted request for distribution is provided.

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6. The data distribution apparatus according to claim 1, further comprising a monitor unit (202) monitoring a congestion state of data distribution by said distribution unit (202), wherein

10 when said monitor unit (202) detects that there is the congestion state, said transmission unit (202) stops or decelerates transmission of said stream data preceding said predetermined serial number, monitors whether recovery from said congestion state is made, and then controls transmission of said data.

7. A data distribution apparatus comprising:

15 a distribution unit (402) using packet communication to simultaneously distribute identical data in streaming form to a plurality of addresses;

an acceptance unit (401) accepting a request for distribution of said data from a reception apparatus; and

20 a transmission unit (402) transmitting, upon the acceptance of said request for distribution, in parallel with the distribution by said distribution unit (402) to said plurality of addresses, data that is the same as the data being distributed by said distribution unit (402), to a unicast address of said reception apparatus from which said accepted request for distribution is provided, for a specific period of time.

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8. The data distribution apparatus according to claim 7, further comprising:

a notification unit (401) receiving, from said reception apparatus from which said accepted request for distribution is provided, notification that the data distributed by said distribution unit (402) is received; and

a stop unit (401) stopping, upon the reception of said notification, the transmission to said unicast address of said reception apparatus.

9. A reception apparatus comprising:

5 a reception unit (301) using packet communication to receive, from a data distribution apparatus, data having a serial number attached thereto in streaming form; and

10 a buffering unit (306) storing, in buffer (309), when an address of a source of the packet received by said reception unit, a service identification number of said source and a service identification number of a destination are specific values communicated in advance to each other with said distribution apparatus and when an address of the destination is an address of said reception apparatus or a multicast address communicated to each other with said distribution apparatus, said packet received, so that no packet having the same serial number as the serial number attached to said
15 packet is stored in said buffer.

10. The reception apparatus according to claim 9, further comprising:

a first distribution request unit (311) making a request for distribution of said data to said data distribution apparatus; and

20 a second distribution request unit (311) making a request for stream data preceding a serial number of a firstly received packet, after said request for distribution is made, to said data distribution apparatus.

11. The reception apparatus according to claim 10, wherein

25 said second distribution request unit (311) makes notification of an amount of requested data in making said request for said stream data preceding said serial number of said firstly received packet.

12. The reception apparatus according to claim 10, wherein
said second distribution request unit (311) makes notification of a type of a
receivable protocol in making said request for said stream data preceding said serial
number of said firstly received packet.

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13. The reception apparatus according to claim 9, further comprising:
a first distribution request unit (311) making a request for distribution of said
data to said data distribution apparatus; and
a notification unit (311) making, when a first multicast packet is received from
said data distribution apparatus after said request for distribution is made, notification
that said first multicast packet is received, to said data distribution apparatus.

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14. A data distribution method for distributing data from a data distribution
apparatus to a reception apparatus, comprising:

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a distribution step (M50-M57) for distributing by said data distribution apparatus,
using packet communication, data having a serial number attached thereto in streaming
form;

an acceptance step ("REQUEST", "APPROVAL") for accepting by said data
distribution apparatus, a request for distribution of said data distributed in said streaming
form and preceding a predetermined serial number, from said reception apparatus; and

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a transmission step (U43-U51) for transmitting, by said data distribution
apparatus, upon receiving said request for distribution, in parallel with the distribution of
said data in said streaming form in said distribution step, said data distributed in said
streaming form and preceding said predetermined serial number.

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15. A data distribution method for distributing data from a data distribution
apparatus to a plurality of addresses, comprising:

a distribution step (M50-M57) for simultaneously distributing by said data

distribution apparatus, using packet communication, identical data in streaming form to said plurality of addresses;

an acceptance step ("REQUEST", "APPROVAL") for accepting by said data distribution apparatus, a request for distribution of said data, from a reception apparatus; and

a transmission step (U52-U55) for transmitting, by said data distribution apparatus, upon accepting said request for distribution, in parallel with the distribution to said plurality of addresses in said distribution step, data that is the same as the data being distributed in said distribution step, to a unicast address of said reception apparatus from which said accepted request for distribution is provided, for a specific period of time.

16. A data distribution program product for a computer to execute a method of distributing data from a data distribution apparatus to a reception apparatus, said method comprising:

a distribution step (M50-M57) for distributing by said data distribution apparatus, using packet communication, data having a serial number attached thereto in streaming form;

an acceptance step ("REQUEST", "APPROVAL") for accepting by said data distribution apparatus, a request for distribution of said data distributed in said streaming form and preceding a predetermined serial number, from said reception apparatus; and

a transmission step (U43-U51) for transmitting, by said data distribution apparatus, upon receiving said request for distribution, in parallel with the distribution of the data in said streaming form in said distribution step, said data distributed in said streaming form and preceding said predetermined serial number.

17. A data distribution program product for a computer to execute a method of distributing data from a data distribution apparatus to a plurality of addresses, said

method comprising:

a distribution step (M50-M57) for simultaneously distributing by said data distribution apparatus, using packet communication, identical data in streaming form to said plurality of addresses;

5 an acceptance step ("REQUEST", "APPROVAL") for accepting by said data distribution apparatus, a request for distribution of said data, from a reception apparatus; and

10 a transmission step (U52-U55) for transmitting, by said data distribution apparatus, upon accepting said request for distribution, in parallel with the distribution to said plurality of addresses in said distribution step, data that is the same as the data being distributed in said distribution step, to a unicast address of said reception apparatus from which said accepted request for distribution is provided, for a specific period of time.